

Practice: 391 - Riparian Forest Buffer**Scenario: #1 - Direct Seeding****Scenario Description:**

Establish a buffer of trees and/or shrubs to restore riparian plant communities and associated benefits. The buffer will be located adjacent to, and up-gradient from, a watercourse or water body, extending a minimum of 35 feet wide and 3000 feet long. The planting will consist of trees or shrubs planted through direct seeding. Planting rate will be approximately 3000 seeds per acre. Includes foregone income. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated water temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

Before Situation:

Typical sites include former riparian forests and habitat used for forage, cropland, speculation property, or other nonforest condition which contains undesirable amounts or types of vegetation. Active bank erosion is depositing sediment, nutrients and organics in the riparian area. Water temperature is high due to lack of shade. Habitat is not desirable for terrestrial wildlife.

After Situation:

A buffer of trees and shrubs will be established through broadcasting seeds, nuts, and mast (fruit of woody species), and mechanically raking to provide seed to soil contact along the riparian corridor. This will provide stability, filtration, shade, and desirable habitat to address the above mentioned resource concerns. Seedbed preparation prior to seeding will be conducted using 490 - Tree/Shrub Site Preparation.

Scenario Feature Measure: Area of planting

Scenario Unit: Acre

Scenario Typical Size: 2

Scenario Cost: \$2,172.38

Scenario Cost/Unit: \$1,086.19

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Mechanical nut planter	1601	Mechanical nut planter for direct seeding of trees and shrubs. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	\$2.07	2	\$4.14
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$24.41	2	\$48.82
Foregone Income						
FI, Corn Irrigated	1960	Irrigated Corn is Primary Crop	Acre	\$536.31	0.8	\$429.05
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	\$144.36	0.9	\$129.92
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	\$271.04	0.8	\$216.83
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.38	3	\$67.14
Materials						
Trees and shrubs, seed	1871	Brush Chipper, 12" capacity, typically 35 HP. Includes chipper and power unit. Does not include labor.	Pound	\$4.67	235	\$1,097.45
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$179.03	1	\$179.03

Practice: 391 - Riparian Forest Buffer**Scenario: #2 - Bare-root, machine planted****Scenario Description:**

Establish a buffer of trees and/or shrubs into a suitably prepared site to restore riparian plant communities and provide other associated benefits. The buffer will be located adjacent to, and up-gradient from, a watercourse or water body, extending a minimum of 35 feet wide. The planting will consist of machine planted bare-root shrubs, evergreen, and deciduous trees in rows. Area will be planted using 3 rows and will use each of the woody plant types. Spacing between plants in each row: shrubs will be 6', evergreen tree spacing will be 12', and deciduous tree spacing will be 15'. Tree rows will be 15' apart. A total tree row length of 3000'. Tree shelters will be placed on the hardwoods and evergreens. Includes foregone income. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated water temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

Before Situation:

Typical sites include former riparian forests and habitat used for forage, cropland, speculation property, or other nonforest condition which contains undesirable amounts or types of vegetation. Active bank erosion is depositing sediment, nutrients and organics in the riparian area. Water temperature is high due to lack of shade. Habitat is not desirable for wildlife.

After Situation:

A buffer of trees and shrubs will be established along the riparian corridor which will provide stability, filtration, shade, and desirable habitat to address the above mentioned resource concerns.

Scenario Feature Measure: Area of planting**Scenario Unit:** Acre**Scenario Typical Size:** 3**Scenario Cost:** \$4,066.04**Scenario Cost/Unit:** \$1,355.35**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$24.41	10	\$244.10
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$31.90	4	\$127.60
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	\$6.60	10	\$66.00
Foregone Income						
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	\$271.04	1	\$271.04
FI, Corn Irrigated	1960	Irrigated Corn is Primary Crop	Acre	\$536.31	1	\$536.31
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	\$144.36	1	\$144.36
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.38	10	\$223.80
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.71	30	\$561.30
Materials						
Stakes, wood, 1" x 1" x 36"	1577	1" x 1" x 36" wood stakes to fasten items in place. Includes materials only.	Each	\$0.59	450	\$265.50
Shrub, seedling or transplant, bare root, 18"-36"	1507	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	\$0.58	500	\$290.00
Tree, hardwood, seedling or transplant, bare root, 16-36"	1510	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	\$0.72	200	\$144.00
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	\$0.42	250	\$105.00
Tree shelter, mesh tree tube, 48"	1556	48" tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only.	Each	\$1.08	250	\$270.00

Materials

Tree shelter, solid tube type, 4" x 36"	1565	4" x 36" tree tube for protection from animal damage. Materials only.	Each	\$3.19	200	\$638.00
--	------	--	------	--------	-----	----------

Mobilization

Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$179.03	1	\$179.03
-------------------------------	------	--	------	----------	---	----------

Practice: 391 - Riparian Forest Buffer**Scenario: #3 - Small container, machine planted****Scenario Description:**

Establish a buffer of trees and/or shrubs into a suitably prepared site to restore riparian plant communities and other associated benefits. The buffer will be located adjacent to, and up-gradient from, a watercourse or water body, extending a minimum of 35 feet wide. The planting will consist of machine planted containerized shrubs, evergreen, and deciduous trees in rows. Area will be planted using 3 rows. Spacing between plants in-rows: shrub spacing will be 6', evergreen tree spacing will be 12', and deciduous tree spacing will be 15'. Tree rows will be 15' apart. Tree row is a total length of 3000'. Tree shelters will be placed on hardwoods and evergreens. Includes foregone income. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated water temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

Before Situation:

Typical sites include former riparian forests and habitat used for forage, cropland, speculation property, or other nonforest condition which contains undesirable amounts or types of vegetation. Active bank erosion is depositing sediment, nutrients and organics in the riparian area. Water temperature is high due to lack of shade. Habitat is not desirable for wildlife.

After Situation:

A buffer of trees and shrubs will be established along the riparian corridor which will provide stability, filtration, shade, and desirable habitat to address the above mentioned resource concerns.

Scenario Feature Measure: Area of planting**Scenario Unit:** Acre**Scenario Typical Size:** 3**Scenario Cost:** \$6,718.34**Scenario Cost/Unit:** \$2,239.45**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$24.41	20	\$488.20
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	\$6.60	20	\$132.00
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$31.90	8	\$255.20
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	\$144.36	1	\$144.36
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	\$271.04	1	\$271.04
FI, Corn Irrigated	1960	Irrigated Corn is Primary Crop	Acre	\$536.31	1	\$536.31
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.71	60	\$1,122.60
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.38	20	\$447.60
Materials						
Stakes, wood, 1" x 1" x 48"	1578	1" x 1" x 48" wood stakes to fasten items in place. Includes materials only.	Each	\$2.02	450	\$909.00
Tree shelter, solid tube type, 4" x 48"	1566	4" x 48" tree tube for protection from animal damage. Materials only.	Each	\$4.10	250	\$1,025.00
Tree shelter, solid tube type, 4" x 36"	1565	4" x 36" tree tube for protection from animal damage. Materials only.	Each	\$3.19	200	\$638.00
Tree, conifer, seedling, containerized, 15 cu. in.	1520	Containerized conifer stock, 15 cubic inches (e.g. 2.0" x 6"). Includes materials and shipping only.	Each	\$0.60	950	\$570.00

Mobilization

Mobilization

Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$179.03	1	\$179.03
-------------------------------	------	--	------	----------	---	----------